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ABSTRACT

The purpose of this paper is to report on the development and validation of the Social Problem Situation Analysis Measure (SPSAM), a measure of the ways in which children understand and attempt to resolve problematic social situations. The SPSAM is an assessment procedure in which children are shown cards depicting sequences of unfolding action in peer- and teacher-related problematic situations. Reactions of second grade children to these situations are examined in terms of their understanding of situations and characters, consideration of possibilities, specificity of planning, expectancies, and behavioral strategies for resolution. Sections of this paper contain a description of the SPSAM and its scoring system, the initial validation design used, replicated findings concerning the organization of social problem solving cognitions in young children, external validation data, and a discussion of implications for future research. External validation studies revealed significant relationships of SPSAM variables to sociometric and teacher rating scores. Internal validation analyses showed consistent patterns of SPSAM variables over time and test conditions. (Author/RH)

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An Innovative Measure of Children's Cognitions in Problematic Interpersonal Situations

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Abstract

The Social Problem Situation Analysis Measure (SPSAM) is an innovative assessment procedure in which children are shown cards depicting sequences of unfolding action in peer and teacher-related problematic situations. Children's reactions to these situations are examined in terms of their understanding of situations and characters, consideration of possibilities, specificity of planning, expectancies, and behavioral strategies for resolution. External validation studies revealed significant relationships of SPSAM variables to sociometric and teacher rating scores. Internal validation analyses showed consistent patterns of SPSAM variables over time and conditions. Use of the SPSAM to study qualitative, quantitative, and developmental aspects of children's cognition, and the relationship of social problem solving cognitions to social adjustment are discussed.

There has been a recent upsurge of interest in the role of social problem solving skills in children's behavioral adjustment (Elardo and Cooper, 1977; Gesten, Flores de Apodaca, Rains, Weissberg, and Cowen, 1978; Kirschenbaum, DeVoge, and Marsh, 1977; Spivack, Platt, and Shure, 1976). Impressive clinical evidence exists that cognitive abilities such as (a) understanding of situations and people's feelings and motives, (b) considering alternative actions and their consequences, (c) planning steps to goals, (d) implementing these steps, and (e) using feedback through self-monitoring are integrally involved in resolving problematic situations that occur as part of daily living (Goldfried and Davison, 1976; Langsley and Kaplan, 1968; Parad, 1965; Rotter, Note 1). For children, problematic situations range from forgetting one's lunch money to wanting something that someone else has, to being excluded or rejected by peers or to being a victim of parental conflicts. There seem to be three common denominators that characterize problematic social situations:

1. The existing or potential fulfillment of needs or wants is felt to be in jeopardy.

2. Expectations about events are found to be in conflict with perceived occurrences of those events.

3. There is felt to be a threat to one's person or to one's self-esteem.

Specifying situations that are potentially problematic has proven to be less elusive than assessing social problem solving (SPS) cognitions. Usually, the goal of such assessment is to provide an enriched understanding of children's cognitive abilities and of the role these abilities play in observed behavior in particular situations.

Unfortunately, the assessment procedures used often do not provide participants with the opportunity to demonstrate their natural SPS skills. Assessment formats

reflect few aspects of the psychological situations under study. Cognitive abilities tend to be measured separately, as if they were cross-situational traits; scores are frequently combined additively, as if such an action invests these scores with new psychological meaningfulness. Finally, there is a tendency for measures to be validated primarily for convergent criteria, and for data to be collected from only one primary source (Elias, 1977; Lumsden, 1976; Messick, 1969, 1975).

Existing reviews of cognitive measurement (e.g., Allen et al., 1976; Elias, 1977; Lumsden, 1976; Messick, 1975) support an assessment approach that attempts to simulate critical features of the behavioral phenomena of interest. Relevant situations should be carefully sampled, the various cognitive abilities being studied should be thought of as operating in an organized, integrated manner, and the assessment format should allow individuality of responding while maintaining consistency across participants. Validation of such a measure should be based on theoretical predictions about what the measure will and will not be related to, and relevant data should be collected from multiple sources.

In addition to building upon the methodological framework outlined above, the research to be reported here has attempted to supplement the innovative theorizing about interpersonal cognitive problem solving pioneered by Spivack and Shure (e.g., Spivack et al., 1976) and Goldried (D'Zurilla and Goldfried, 1971). Duncker (1945) provides fascinating insights into the complexity of problem solving from a Gestalt point of view. Harré (1974) emphasizes the generality of problem solving cognitions and the process through which series of cognitive rules lead to behavior. Piaget (e.g., Flavell, 1963) believes that there are qualitatively different forms of cognition and that cognition is structurally reorganized as functions of maturation and experience. Finally, Abelson (1976) describes our organization of experiences

in terms of psychologically meaningful "events," the complexity of which is variable within broad developmental and experiential boundaries.

SPS can be considered as one aspect of means-ends cognition--the planning of actions toward desired goals--that is considered by many as basic to human adaptation (Harré, 1974; Kaplan, 1973). Cognitive and behavioral capacities required for resolving problematic social situations are developmentally formed in the individual's continuous interaction with the physical, social, and interpersonal environmentals. Adaptation requires that SPS abilities be organized toward the attainment of ends; thus, resolution of problematic situations can occur in a variety of ways, influenced by individual social learning histories within local and broader cultural contexts.

While a common, general SPS process might occur, the content of the thoughts and actions can vary considerably; both qualitative and quantitative assessment are necessary and complementary if one is to understand how a given resolution was arrived at. Suggested in the latter point is that cognition-behavior correspondence cannot be expected to be direct. Indeed, a variety of social skills and social setting variables influence the way a cognitive problem resolution is translated into action.

The PSAM is designed to tap a range of quantitative and qualitative cognitive variables within a general SPS framework:

1. Understanding of situations and persons involved in them
2. Consideration of possibilities via means-to-ends cognitions
3. Specificity of planning
4. Expectancies about outcomes of situations and ways of meeting one's needs in problematic situations
5. Cognitive-behavioral strategies directed toward problem resolution.

It is expected that these five groupings of variables will be empirically discriminable from each other, and that relationships will be stronger within groupings, rather than between groupings. By combining these groupings with each other and with non-SPS influences on action, it is believed that convergent and discriminant SPS cognition-behavior relationships can be obtained.

The present status of empirical research on the relationship of interpersonal cognitive or social problem solving skills with behavioral indices of adjustment can best be characterized as inconclusive. Partly, this is due to the lag of measurement behind theoretical advances in the area of children's social cognition. There is also the related difficulty of choosing theoretically appropriate behavioral criteria.

In a review of over twenty recent reports of attempts to train particular SPS skills (Elias, 1977), it was found that most evidence for goal attainment is anecdotal or intuitive. Reaching intermediate criteria, such as increasing play (Rosen, 1974), or increasing story memory or use of connectives in free storytelling (Saltz and Johnson, 1974), does not necessarily mean that one is facilitating social adjustment among persons having difficulty, nor that one is increasing rates of personal growth.

Even in programs such as those of Spivack and Shure (1974), in which significant numbers of aggressive and isolated children were rated as adjusted after training, and of Kelly (1974), in which social and self-worth were reportedly enhanced and a feeling of personal competence to solve everyday problems was instilled, one cannot clearly attribute such gains to the problem solving content of the programs. Indeed, Spivack and Shure (1974) and Kelly's (1974) programs have more in common through their experiential training formats than they have in the problem solving variables emphasized in the content of their training curricula.

Yet, generalization of training to behavior in *in vivo* problematic situations found by Allen et al. (1976) and McClure, Larcen and Chinsky (in press) and the pattern of evidence of benefits from training reported by Spivack et al. (1976) suggest that there is some empirical relationship of SPS to interpersonal behavior. It was decided that external validation of the SPSAM would follow a theoretical model of how SPS cognitions and behaviors interrelated. "Adjustment" was viewed as consensually validated judgments about individuals' success in adapting to various social environments. Particular SPSAM scores might be related to particular indices of adjustment, but the major evidence for external validity would be the extent to which sets of SPS variables increased the explained variance in adjustment indices in *combination* with each other *and* with other influences on observed actions.

Through a hierarchical multiple regression framework (Cohen and Cohen, 1975), one would expect SPSAM variable sets to provide reliable increments in shared variance with adjustment measures from different sources (peers, teachers, self), over and above that accounted for by IQ, socioeconomic background, sex, classroom environment, and reading scores. Predictive relationships should be strongest with behaviors most clearly related to SPS, such as being perceived as a child one goes to with questions or problems or as one who does things on his or her own and does not need much help from others.

The purpose of this paper is to report on the development and validation of the SPSAM, a measure of the ways in which children understand and attempt to resolve problematic social situations. The following sections contain a description of the SPSAM and its scoring system, the initial validation design used, replicated findings concerning the organization of SPS cognitions in young children, external validation data, and a discussion of implications for future research and practice.

Method

Materials

Overview. The SPSAM is a pictorial measure consisting of six stories representing three types of problematic situations children typically encounter: (a) being unjustly blamed by a teacher, (b) being excluded by a group of peers, and (c) wanting something one other peer has; there are two equivalent stories for each situation. Each story contains six cards which depict the action as it might gradually unfold from the perspective of a focal child in an actual situation. By employing an interview procedure similar to, but more structured than, Piaget's "method clinique" (Flavell, 1963), an examiner attempts to elicit the process by which a child comprehends and cognitively reacts to the situations, while imposing relatively few experimental constraints on the child.

Format. It was decided that the presentation of depicted sequences of action simulating the development and resolution of problematic social situations would allow children to become involved in and react to self-contained, meaningful "events" (Abelson, 1976). Empirically, there is work suggesting that single pictorial stimuli provide inadequate information, videotaped sequences typically lack background information and, for many children, occur too rapidly to allow an adequate assessment of their varied SPS cognitions, and that accompanying auditorily presented information focuses children's attention on certain aspects of situations (e.g., Bork, 1975; Feldhusen, 1975; Flapan, 1968).

Selection of situations for the SPSAM followed the behavioral-analytic principles outlined by Goldfried and D'Zurilla (1969). Each of the three situations was separated into meaningful parts that would be comparable across stories and be compatible with the theoretical framework to be used in scoring the SPSAM. An undergraduate art major rendered the stories until satisfactory, after which they

were photocopied, pasted onto white poster board, cut into cards of approximately 5" x 7", colored slightly to aid in the differentiation of characters, and covered with a clear vinyl adhesive to protect them.

Procedure. The procedure for a given SPSAM administration essentially involves an examiner's following a child through his or her analysis of and reaction to three problematic social situations, one of each type mentioned earlier. Structurally, each unfolding aspect of being confronted with problematic situations is treated as a meaningful episode within the overall story. Pictures are presented and questions asked as outlined in Table 1, using Story B (Child excluded from a baseball game) as an example. Note that stories are similar in structure and that the procedure is the same for all stories; Table 2 contains the script for a complete set of SPSAM stories, and it can be seen how each fits into the procedure as shown in Table 1. A set of conditional probes , involving the examiner's pointing to some aspect of the action on the story cards neglected by the child and asking, "What's happening here?" and, if necessary, describing exactly what is depicted, was included to ensure the child understood what was being shown and asked. The obstacles given in episodes 5 and 7 involved the examiner's negating resolutions given by the child in episodes 3, 4 or 6. It was felt that providing an obstacle to a solution the child has developed and had some investment in would produce meaningful but non-harmful cognitive conflict for the children.

Scoring manual. The scoring manual reflects guidelines in Rotter (1954) and contains general scoring principles, a definition and overall description of the variables to be scored, and specific criteria and examples for scoring each variable in each story. Table 3 contains a listing of major variable classes and brief descriptions of specific variables. Means, outcomes, PLANS, valence of

resolution, initiative-taking, and resolution strategy are scored for each episode of each story. Understanding of situation and characters variables are scored once per story, in the first and second episodes, respectively. Elaborations scores are counted in each episode, but a ratio of elaborations per scorable unit of cognition is computed for each story overall and for those episodes involving obstacles.

The process dimension of children's social cognitions can be studied by comparing the interrelationship of various sets of SPSAM variables at any given point (episode) during a single problematic situation, over different aspects of a given situation, and across different situations. Both quantitative and qualitative variables can be examined to broaden one's understanding of the phenomena of interest. During the validation phase of SPSAM development, scores were not combined across stories so that the covariation of the many SPSAM indices could be obtained within the multiple regression framework.

Participants and Setting

The study was conducted in an elementary school in northeastern Connecticut. The town in which the school is located is small, rural, and comprised largely of white working class and middle class residents; the school provides an "open" educational program in most classrooms and has an atmosphere similar to British programs described by Grugeon and Grugeon (1971). Second graders from nine classrooms were involved in each of two measurement periods. In the first period, n = 83 (41 males, 42 females), and in the second, n = 85 (44 males, 41 females); there was an overlap of greater than 90% between participants in each period.

Children were selected from classrooms in the experimental and control conditions of Larcen's (1978) training program to increase SPS skills. The only departure from randomization was the automatic assessment of children whose parents

participated in the training program (n approximately = 20). The children were an average age of 7 years, 6 3/4 months (S.D. = 4.83 months) and had an average Otis-Lennon IQ of 116.26, S.D. = 14.30; there were no sex differences in age, IQ, or parental background.

Validation Design

Internal relationships among SPSAM variables were analyzed in three primary ways. First, covariation among variables within a given story would be expected to approximate theoretical predictions about sets of SPS cognitions. Second, the situational influence on SPS cognitions can be estimated by examining interrelationships among the two peer-oriented stories and the one in which an authority figure is involved in the child's difficulty. Finally, the sensitivity of the SPSAM to change can be evaluated by (a) examining the effects of within-procedure changes (such as obstacles) on SPSAM scores, (b) noting the effects a specific external influence, Larcen's (1978) training program, has on SPSAM scores, and (c) using the control group in Larcen's intervention to assess normative developmental shifts over a period of approximately 2 1/2 months. Also, mediating influences on obtained relationships, such as examiner and rater effects and shared variance with demographic and verbal ability indices, were examined.

An important overall concern of internal validation was to evaluate the stability of patterns of interrelationship among SPSAM variables. That is, while the magnitudes of scores of individual children might show some fluctuation, the strength of relationship among variables should be relatively stable over time.

External validation of the SPSAM followed the format outlines in Table 3a. Locus of control was measured with the pictorial Pre-school and Primary Nowicki-Strickland Internal-External Control Scale (Nowicki and Duke, 1974). As suggested by Mischel, Zeiss, and Zeiss (1974), items were reliably rated as to whether or

not they represented situations whose occurrence might be perceived as "negative" (LOC-neg) or "positive" (LOC-pos) by second graders; a total score was also used. Self-esteem was measured with a modified version of Bolea, Felker, and Barnes' (1971) pictorial self-concept scale. The scale consists of 50 pictures of a focal boy or girl involved in a variety of interpersonal activities, and children are asked to sort these pictures into three piles: always, sometimes, or not at all like me. Both locus of control and self-concept were group assessed, in class.

The Bower sociometric used was his pictorial "Guess Who" game (Bower, 1969); one peer nomination is given for each of 20 depicted activities. The Peer Attribution Inventory (PAI) was developed to supplement the Bower data, and includes 20 items covering areas such as cooperative behaviors, independent problem solving, social aggressiveness, emotional control, and peer relationships. Items were worded both positively and negatively, built-in reliability checks were used, and item content related to SPSAM problem resolution strategies and the teachers' ratings to be discussed next. A game format, "Pick-the-child-who-" always/never shares, is a very happy/unhappy child, etc., was used, items were descriptive and behavioral in nature, and two names were requested for each item. Both the Bower and the PAI were individually administered. It should be noted that, because of the large number of measures used in the project, not all children received all measures; rather, semi-overlapping random samples were used.

Teachers were presented with 13 unlabeled dimensions of observable behavior descriptively anchored at 5 rating points; descriptions focused on frequency of behavior. They were asked to rate all children on one dimension before going on to the next, and to do each on a separate page; they were also cautioned about halo effects and subjective impressions. The 13 dimensions correspond to these attributes: Cheerfulness, Leadership, Originality, Anger, Social Problem

Resolution, Patience, Friendliness, Emotional Control, Curiosity, Interpersonal Adjustment to Social Situations, Planfulness, Quarrelsomeness, and Group Involvement.

Classroom environment was measured by the Dimensions of Schooling Questionnaire (Traub, Weiss, Fisher, and Musella, 1972). Four scores from this measure, completed by teachers, were used in data analyses: breadth of learning settings, individualization of student pacing, role of the teacher, and individualized programming and "openness" of the educational environment.

Procedure

Two waves of measurement were employed, serving as part of pre and post training assessment around Larcen's program. Approximately 2 1/2 months separated each wave. For the first measurement period, only one form of the SPSAM (Stories A, B, and C) was used; by asking children to give the focal child in the stories a name after the session was over, it was found that boys and girls significantly tended to see that child as the same sex as themselves. Male and female forms were available for period two (Stories D, E, and F). SPSAMs were individually adminstered by trained undergraduates, with the order of presentation of stories and matching of children to examiners randomized. Sessions lasted about 1/2 hour and were tape recorded (with parental permission), transcribed, and scored by raters who were trained in the use of an explicit scoring manual. Examiners, transcribers, and raters were blind to experimental arrangements, and the latter were also blind to classroom and sex of child. The children were told they would be helping the examiner and would find the procedure fun. Rapport was achieved before SPSAMs were begun, and the children uniformly reported enjoying the experience.

Parent data, IQ and reading scores, and classroom environment data were collected for the first measurement period only. The Bower, teachers' ratings, self-esteem, and locus of control data were collected during both periods. The PAI was developed in response to shortcomings in initial Bower data, and was available only for the second measurement period. Note that in the results reported, n's will vary for different analyses. This is because of occasional tape recording difficulties with SPSAM sessions (assessed as nonsystematic across children) and because of overlapping random samples used for the criterion measures, to avoid excessive testing per child.

Results: Internal Validation

Data pertaining to the internal properties of the SPSAM will be presented as follows: (a) descriptive data, (b) covariation among variables within stories, (c) situational influences reflected in differential responses to teacher and peer stories, (d) sensitivity of the SPSAM to change, and (e) mediating influences on obtained relationships, such as measurement instability, testing situation factors, and environmental and personal background characteristics.

Descriptive Data

Tables 4 through 9 contain data for the cognitive and expectancy variables measured by the SPSAM; nearly all are listed for the entire sample, by story, for both measurement periods. The exceptions--initiative-taking and generalized tendency to consider alternatives (GTALTS)--are designed as broad, cross-situational indices. It will be most useful to summarize the data in terms of the performance of the "average" child. Table 3 can be consulted for detailed definitions of variables.

Between 2 and 3 probes were sufficient for most children to fully grasp the problematic nature of the situations presented. The meaning of each picture could

be understood, but the action was not clearly linked. Most children understood other characters in terms of each one's personal, separate perspective of the situation; only one attribution about characters was generally made, per story. These ability levels closely conform to findings of other researchers assessing seven year old children's cognitive ability (e.g., Flavell, 1968; Selman and Byrne, 1974).

The average child gave one unconnected outcome per story, often in response to seeing the blank card and being asked what could happen next (e.g., he'll be playing). Between three and four means were given, spanning a child's being confronted with the problem, through receiving an obstacle, to the final resolution (episode 5). Generally, one mean was given both in response to being asked how the depicted resolution could occur (alternative means to goal, e.g., he would ask them if he could play), and also after an obstacle was presented to an alternative suggested by the child (e.g., she might go play someplace else); approximately two-thirds of the means given per story were unique, i.e., non-repetitive. Finally, explicit means-ends linkages (PLANS) occurred with a relatively low frequency, as expected for this age group (e.g., if she asks them to play, they'll say yes and he'll play). It is noteworthy that, under the obstacle condition of episode 5, cognitive production of PLANS further decreased.

Elaborations data are presented as ratios per ten SPS cognitions (i.e., outcomes, means, or PLANS) in a given story. Children were considerably more explicit in their statements about the specific actions they would take than they were about the specific interpersonal context in which they would act or the conditions under which they would attempt an action. These findings were the same, on the average, when children responded to obstacles, although the marked increase in variance will be discussed in a later section.

Expectancy variables. While most children failed to provide a means to the goal that involved personal initiative by the focal child during the first measurement period (i.e., initiative = 2 or 3, e.g., the teacher will do it for me), the shift to more personally initiated means in the second period will be described later as an effect of Larcen's (1978) intervention program.

GTALTS is scored by adding, across stories, the number of episodes in which more than one means or PLAN is provided; scores can range from 0-12, as episodes 4, 6 and 7 are excluded. Approximately 61% of the children measured lacked this tendency to independently, spontaneously consider alternatives; this figure corresponds to developmental predictions (Allen et al., 1976; Flavell, 1963; Spivack and Shure, 1974).

Valence of resolution, i.e., the type of outcome children expect, tends to be more positive in peer stories than in teacher stories. Also, when obstacles are presented, there is a markedly increased expectation that no positive outcome will occur.

Resolution strategy variables. The relative use of different problem resolution strategies in Stories A-F is summarized in Table 10. Direct discussion and resolution by others seem to be the preferred strategies, while pestering is rarely considered by these children. Children's salient resolution strategy in a given episode can be found in Tables 11 and 12; these data are consistent with those in Table 10, and indicate that children do seem to have measurable preferences among the alternative means they consider. This variable seemed particularly sensitive to within-procedure change and will be discussed further in a later section.

Summary. The SPSAM seems to be providing indices of a variety of cognitive abilities at expected developmental levels. An important question is the interrelationship of SPSAM variables, and the extent to which they conform with theoretical predictions of sets of variables.

Covariation of Variables Within Stories

Intercorrelations of scores for major SPSAM quantitative variables were computed for all stories; a sample set of correlations can be found in Table 13. Although the patterns of relationship were generally clear, it was decided to also perform principal factor analyses with a varimax rotation on scores for each story, to account for overlapping variance. Story E data, shown in Table 14, is representative of the overall findings. Five factors were generally found, accounting for nearly 70% of the variance. Within that common variance, the following groupings tended to be consistent across stories:

1. Understanding situations (inverse relationship of Probes and Integration of Story Parts)
2. Understanding characters (Role-Taking and Breadth of Attributions)
3. Explicitness of means-ends linkages and Specificity of actions considered
4. Personal initiative and considering alternative means to goals.

The data suggest that SPS variables can be used to organize and interpret children's verbal responses to SPSAM situations. Basic SPS cognitions can be reliably discriminated as means, unconnected outcomes, and explicit means-ends linkages (PLANS); these variables seem to exhibit fairly stable interrelationships across stories, with means and PLANS relating positively to each other and generally relating negatively with outcomes. Relevant data can be found in Table 15.

Means in response to obstacles are generally distinct from means to reach given goals, an important finding that will be analyzed further. Finally, the association of PLANS with specificity of actions suggests that a detailed consideration of possibilities and outcomes may function as a cognitive preparation for taking a particular action, following a more general consideration of possible options that can be taken.

Effects of Different Problematic Situations on SPSAM Performance

There are a number of converging indications that children's reactions to the teacher stories (A and D) are different from their reactions to the peer stories. As can be seen in Tables 4 and 5, (a) the number of means, (b) means in response to obstacles, (c) explicit means-ends linkages, and, particularly, (d) unique means and explicit means-ends linkages were meaningfully reduced for Stories A and D. This is further reflected in slightly stronger correlations between variables in peer stories than in stories involving the teacher (see Table 15).

Qualitative differences can be seen in Table 10, in which help-seeking is clearly not a useful strategy when dealing with a teacher. Also, Tables 8 and 9 show that negative outcomes are expected when children are first confronted with a problem with a teacher, and positive outcomes are expected by only one child in five if they encounter an obstacle when involved with the teacher.

It can be concluded that (a) the SPSAM is sensitive to children's differential reactions to problematic situations, and that (b) in reactions to conflict with a teacher, seven year olds' social problem solving strategies incorporate some boundaries and restrictions not apparent in their reactions to conflicts with peers.

Sensitivity of the SPSAM to Change

Within-in-procedure changes. In addition to presenting different problematic situations, the SPSAM also contains an obstacle section within each story. The effect of giving children obstacles is stronger across situations than is the effect of situational differences. Although average scores for alternative means to goal and alternative means in response to obstacles are similar across stories, these two SPS indices shared less than 10% of common variance across Stories A-F, r = .05, .11, .32, .13, .00, and .11, respectively.

Tables 11 and 12 show that means after obstacles tend to involve (a) resolution by others, (b) nonconfrontation, (c) help-seeking, and (d) uncertainty, while means where the child is aware of a given outcome (Episodes 3 and 4) frequently involve direct discussion. Closer inspection of the data in Tables 11 and 12 reveals that the general tendency toward less direct and active positive resolutions after obstacles is not shared by all children. Comparisons of scores for overall elaborations to elaborations in response to obstacles (Tables 4 and 5) indicate that, for all variables in all stories, there is significantly greater variance in response to obstacles, $p < .05$. Inspections of distributions of elaborations to obstacles scores confirm that they tend to be bimodal around the average.

In summary, converging evidence indicates that obstacles exert a powerful effect on children's SPS cognition. For some, the thwarted expectations act as a damper to further creative problem solving; for others, obstacles seem to provide a push toward further efforts at resolution. Most interesting, perhaps, is that these groups cannot be adequately predicted from a knowledge of which children generate many alternatives in a traditional means-to-ends assessment format, as represented by episodes 3 and 4.

External changes. Changes between measurement periods on scores of SPSAM variables with relatively narrow ranges of values can be found in Table 16. In general, indices of understanding of situations and characters showed stability or improvement over the 2 1/2 month period; consideration of possibilities variables were more stable, particularly explicit means-ends linkages.

Importantly, the SPSAM seems sensitive enough to measure differential change occurring due to Larcen's (1978) intervention program. Table 17 presents relevant data for this issue. While slightly greater understanding of situation and characters was achieved by trained children, it is in the areas of initiative taking

stability of SPSAM scores; Tables 16 and 17 support the idea that the SPSAM is sensitive to developmental growth, as well as directed change efforts.

Testing situation factors. Multiple analyses of variance were used to examine testing influences by variable and by story. Randomness of distribution of male and female children to male and female examiners was supported by ANOVAs. No systematic sex of examiner, sex of child, or interaction effects on SPSAM scores were noted, nor were any rater effects noted.

Anecdotally, it should be noted that the non-test format of the SPSAM seemed to keep social desirability operating at a level no greater than is the case for interpersonal situations. The diverse nature of qualitative responses does provide empirical indication of the relative lack of constriction of children's responses. The attitude of the examiners, teachers, and other school personnel further helped downplay evaluation apprehension among children.

Background characteristics. No systematic relationship of SPSAM scores to sex of child, Otis-Lennon IQ, standardized reading scores, classroom environment (Traub et al., 1972) or age were noted. It is important to note that restricted range in classroom environment (classrooms all had many "open education" features) and age may have limited obtained relationships. ANOVAs uncovered some relationship between role-taking and the parental occupation and education scales of Hollingshead and Redlich (1958); however, this relationship is not clearly linear and systematic. The data suggest that children whose parents have had moderate levels of education and/or intermediate occupational status tend to have the highest role-taking scores. Data from future studies using the SPSAM with a broad range of samples should shed further light on these findings.

Results: External Validation

Results pertaining to external relationships of SPSAM scores will be discussed in three general areas: (a) shortcomings of criterion measures, (b) association of SPSAM variables with indices of social problem solving behavior, and (c) associaton of SPSAM variables with indices of social adjustment.

Criterion Measures

For a variety of reasons, different sections of the criterion measures were excluded from major analyses. Bower (1969) responses were highly influenced by sex bias, largely due to the pictorial stimuli. Ceiling effects on teachers' ratings limited variability and led to skewed distributions on all but two dimensions. Questionable reliability and internal consistency for the self-esteem measure for this sample led to its not being used. Because of overlapping samples, a relatively small n was available for the primary criterion measure, the PAI. As a result, separate analyses were done by story on selected PAI behaviors, to minimize the number of independent variables used per subject and the likelihood of significant results being obtained by chance.

SPSAM Variables and Social Problem Solving Behavior

Setwise hierarchical multiple regression was the primary data analytic technique used (Cohen and Cohen, 1975). Initially, five variable sets were used to assess the increment each would provide in predicting SPS behavior: (a) environmental influence (parent occupation and education), (b) social perception and individual expectancies (personal initiative, locus of control, IQ), (c) understanding of situations and characters, (d) basic SPS cognitions, and (e) elaborations, the latter three sets entirely composed of SPSAM scores. Because set (a) accounted for approximately 7% of the variance of assorted sociometric and teachers' ratings

scores, it was decided to "save" degrees of freedom and use these theoretically ordered sets only:

1. Sex of child and, in the second measurement period, intervention condition.

2. Social understanding: probes, integration of story parts, role-taking, breadth of attribution

3. Consideration of possibilities and expectancies: unconnected outcomes, personal initiative and either alternative means to goal and after obstacles or locus of control and general tendency to consider multiple alternatives.

4. Explicit planning-specificity: explicit means-ends linkages, specificity of actions, conditionality, and context.

Two PAI attributes most indicative of success in resolving problematic social situations were selected for initial analyses. These included being rated as (a) a child who one goes to with questions or problems and (b) a child who can do things on his or her own, who seems independent. Analyses for each of these attributes were done for SPSAM Stories D, E, and F. For "go to with questions," set 3 provided a meaningful increment in the variance, $F(4,12) = 2.43$, $p < .10$; set 3 included alternative means to goal and after obstacles. Set 4 provided a further increment, $F(4,8) = 6.40$, $p < .03$. The overall $R^2 = .90$, and the adjusted $R^2 = .73$. Within the overall regression model, explicit means-ends linkages was the major predictor variable, $F(1,8) = 15.91$, $p < .005$, beta = 1.07, $r = .20$. Subanalyses of individual SPSAM variables for Stories D, E, and F simultaneously regressed onto "go to with questions" yielded supportive data as shown in Table 18.

Overall, a child one goes to with questions or problems seems to be one who, according to the SPSAM, explicitly links ends with their means (e.g., If I ask nicely she'll let me). The child also considers multiple means in response to peer

problems (e.g., Well, I could take it, or go play with something else), but does not choose to do so when confronting the teacher. Finally, that child also tends to suggest outcomes (that Table 9 indicates are usually positive) to peer group problems, and has an above average understanding of peer perspectives in a dyadic interaction. Note how differences in results for peer and authority stories reflect the strong impact of situational factors on children's SPS thinking.

For doing things on one's own, set 4 of Story F tended toward significance in the multiple regression analysis, $\underline{F}(4,7) = 2.55$, $p < .12$. Again, the major predictor is explicit means-ends linkages, $\underline{F}(1,7) = 3.49$, $p < .11$, beta = .53, $\underline{r} = .43$. The overall analysis, with locus of control and general tendency for alternatives in set 3, had an $R^2 = .76$, adjusted $R^2 = .27$. Subanalyses again showed that considering alternative means to goals significantly predicted the peer nomination data (Table 18).

It was noted in the internal validation data that obstacles seemed to have a facilitative effect on some children's SPSAM performance, while decreasing that of others. To determine the empirical meaning of this difference, two groups of children were formed: one with higher scores on specificity of action strategies in response to obstacles than on overall specificity, the other with higher overall specificity scores. Discriminant analyses (DA-Tatsuoka, 1970) were computed to see if these groups, formed for SPSAM Stories A, B, and C, would have different PAI profiles.

For Story A, DA showed a statistically meaningful separation of the two groups, with an eigenvalue = 1.90, Wilks' Lambda = .35, canonical $R^2 = .66$, $\chi^2 (11) = 18.61$, $p < .07$. Greater specificity after obstacles is associated with being seen as able to do things on one's own and being well liked in recess; greater overall specificity is associated with having many friends and having trouble waiting one's turn. Group classification using the DA weights for PAI scores was 92.0% correct.

Story B groups were not significantly separated by the PAI. However, Story C showed a tendency toward significant group separation, eigenvalue = 1.38, Wilks' Lambda = .42, canonical R^2 = .58, χ^2 (11) = 16.88, $p < .11$. Once again, greater specificity after obstacles related strongest to being seen as able to do things on one's own, and also to being happy. Higher overall specificity again was most related to having many friends, and also to being seen as getting into trouble but able to get oneself out. Classification into groups was 85.2% correct.

Summary. SPSAM scores have shown a very promising relationship to behavioral indices of SPS. From the differential prediction by teacher and peer stories and the differential correlates of peer-attributed characteristics to children who seem more or less responsive once faced with obstacles, it seems as if the SPSAM is sensitive to shifts in situational context and to barriers placed in the path of children's normal problem-solving.

The complexity of relationship involved is only suggested by the analyses presented here. It is interesting that explicitness-specificity accounted for significant increments in variance over and above other variables such as alternative means, suggesting that someone's judgment about a child's social adjustment is influenced by how that child carries out his or her cognitive plans. Also, the subanalyses in Table 18 imply that effects may have been stronger if the n were large enough to allow multiple regression variable sets to contain indices from all three stories simultaneously.

SPSAM Variables and Social Adjustment

Two dimensions among the teachers' ratings exhibited sufficient variability to serve as dependent variables for multiple regression: (a) interpersonal adjustment to everyday social situations, and (b) group involvement, both in the first measurement period. Getting involved in groups was predictable from Story, B, the

peer group situation. Elaborations provided the significant increment in variance, at $p < .005$. Individual predictors included specificity of actions, $F(1,30) = 9.92$, $p < .005$, beta = .53, $r = .33$; context, $F(1,30) = 13.63$, $p < .005$, beta = .50, $r = .33$; and conditionality, $F(1,30) = 6.30$, $p < .30$, beta = -.39, $r = .05$. Also related was personal initiative, at $r(41) = .38$, $p < .02$. The overall $R^2 = .63$, adjusted $R^2 = .44$, showing a clear relationship of the SPSAM peer group situation to a close behavioral referent. No variable sets in Stories A, B, and C incrementally predicted interpersonal adjustment.

Although SPS quantitative variables might bear little systematic relationship to general ratings of adjustment by teachers, it is the case that the behavioral resolution strategies children chose are associated with how others observe them behaving. For interpersonal adjustment ratings during both measurement periods, and for group involvement ratings during the second period, groups of children who manifested noticeable high or low degrees of these behaviors could be created. The top or bottom 20% in a given class form these groups; where there was no clearly distinguishable 20% grouping in a classroom, it contributed no children to the overall group for that dimension. Table 19 presents the relevant data, based on DA's employing the eight problem resolution strategy (PRS) categories to predict group membership.

In summary, it can be seen that:

1. Thinking about being nonconfrontative when dealing with the teacher and about being more verbal, active, and nonaggressive when dealing with peers is associated with being seen by the teachers as being able to adjust very well to interpersonal situations.

2. Thinking about being nonconfrontative with the teacher and about interacting verbally and cooperatively with peers is associated with being seen by teachers as being very comfortable in group activities.

3. Clearly, the double standard of behavior reflected in these ratings influences what children must do to be considered "adjusted," and how they "should" think about different situations. Thus, "adjustment" seems at least as strongly related to qualitative aspects of SPS as to quantitative factors such as consideration of possibilities.

Two behaviors on the Bower sociometric showed sufficient variability and freedom from sex bias to serve as dependent variables in a multiple regression analysis: (a) not listening to the teacher, and (b) working quietly at the desk, both for the first measurement period. For the former behavior, no SPSAM sets from Series A, B, and C provided significant increments in variance.

For working quietly at the desk, reliable increments were accounted for in Story A by set 2, $F(4,10) = 3.33$, $p < .06$, and also by set 3 (comprised of overall means, unconnected outcomes, and explicit means-ends linkages--PLANS), $F(3,7) = 7.00$, $p < .02$. The overall analyses had an $R^2 = .98$, adjusted $R^2 = .91$. While no sets were significant in Story B, set 4 (comprised of specificity of actions, context and conditionality) provided a significant increment in Story C, $F(3,8) = 8.47$, $p < .01$. The overall $R^2 = .88$, with its adjusted value = .64. Table 20 contains the major predictor variables. Note that it is the child with a relatively strong understanding of characters in the teacher story and who also did not think of many PLANS to meet his or her needs when in conflict with the teacher, that tended to be nominated by peers as a child working quietly at the desk.

The PAI provided further external validation evidence for the SPSAM. The expectancy that personal initiative taking will facilitate problem resolution is positively associated with sharing with others, not being seen as unhappy, never waiting one's turn, and wanting one's own way, $r(34) = .38$, $p < .02$; $-.31$, $p < .07$; $.28$, $p < .09$; and $.36$, $p < .03$, respectively. While regression analyses for Stories D, E,

and F showed no significant increments between SPSAM sets and sharing, subanalyses of single variables across stories showed that sharing was most associated with alternative means to goals, $R^2 = .33$, $F(3,22) = 3.58$, $p < .05$, particularly in Story E, $F(1,22) = 7.59$, $p < .02$, beta = .56, $r = .57$; also associated were unique means-ends linkages, $R^2 = .26$, $F(3,32) = 3.70$, $p < .05$, and specificity of actions, $R^2 = .20$, $F(3,32) = 2.65$, $p < .07$.

Two final analyses show the relationship of the SPSAM to diverse indices of adjustment. It was reasoned that SPSAM scores for Story F (the story about one child wanting to use a toy that a peer is using) should meaningfully relate to PAI scores for waiting one's turn. Indeed, the overall $R^2 = .88$, adjusted $R^2 = .64$. Set 3 provided the significant increment, $F(4,11) = 5.50$, $p < .03$, with alternative means to goal and after obstacles as the major positive predictors.

Also, an evaluation was made of the extent to which certain SPSAM scores might be associated with being seen by one's peers as very happy. In Story D, set 4 provided a reliable increment, $F(4,9) = 3.49$, $p < .06$; overall $R^2 = .80$, adjusted $R^2 = .49$. In Story F, an increment was provided by set 3 and the major predictor variable was alternative means after obstacles, $F(1,11) = 6.82$, $p < .05$, beta = .52, $r = .40$. The overall and adjusted $R^2 = .76$ and .29, respectively. Children seen by their peers as happy were those who did not use their resolution abilities when dealing with the teacher, but who could think of means toward resolution even after being faced with an obstacle to getting what they wanted from a peer.

Summary. The following points serve as a general summary of the external validation data:

1. The SPSAM simulational procedure elicits cognitive responses from seven year olds that are related to peers' and teachers' views of how they in fact behave.

2. Parental background has a low-level relationship to ratings of behavior; indices of understanding characters and the situation tend not to provide a significant increment to parental background as an aid to explaining the behavioral ratings given to the children in this sample.

3. Explicitness of planning and specificity seems most closely predictive of social interrelationship data and often provide a significant increment in prediction, above that of other SPS variable sets.

4. Relationship of SPSAM variables to behavior vary in strength and directionability as a function of the closeness of the stimulus story to the behavior being predicted.

5. Specifically, SPSAM scores are highly related to being seen as a child (a) one would go to with questions or problems, (b) who can do things on his or her own, and (c) who gets involved in group activities; SPSAM scores are differentially related to how liked one is by peers and to various desirable and undesirable classroom and recess behavior. Importantly, knowing when to use one's planning skills and being able to cognitively respond to obstacles that prevent the meeting of one's desires are predictive of being seen by peers as an independent and happy child.

6. The SPSAM was able to detect subtle differences in the content of children's cognitive approaches to different situations, and these differences are associated with teachers' ratings of the children's behavior.

Discussion

When a young child is confronted by a problematic social situation, it seems as if a number of interrelated cognitive processes occurs. The child mobilizes his or her understanding of the situation and the characters in it and considers possible actions and outcomes. Further, that child thinks about the action to be taken with varying degrees of (a) explicitness with respect to ends and (b) specificity with respect to means. However, the resolution strategies considered are tempered by expectancies about outcomes of particular types of situations and expectancies of how desired outcomes are best reached. If an initial attempt at resolution meets with an obstacle, the child may resign himself or herself to the situation or persistently begin another mode of approach. It appears as if the SPSAM is able to provide an index of these cognitive processes and their adaptations to the requirements of different situations, as well as to ongoing changes during the unfolding of a particular situation.

In addition to the incorporating the open-middle measurement technique of Spivack and Shure (1974), and Duncker (1945) and McClure's (1975) *in vivo* disruptions to demonstrate the impact of obstacles on problem solving, the SPSAM provides a systematic simulation of the unfolding action in a typical problematic situation. Assessment of children's cognitive reactions tends to be simultaneous, rather than retrospective or reconstructive. The responses relfect, ideally, more about a child's performance than about his or her competence, as is the case with measures in the Spivack and Shure tradition that encourage children to maximize their output.

The SPSAM is also an attempt to make an integrative assessment of the many different abilities a child brings to bear when reacting to a problematic social situation. These abilities, consistently reflected in work from Dewey (1933) through the current study, include:

1. Social understanding: understanding of situaitons and characters involved.

2. Consideration of possibilities: alternative means and outcomes or consequences.

3. Explicitness and specificity of actions considered: explicitness of means-ends linkages, specificity of intended actions, and elaborations of the conditions and interpersonal context in which action will occur.

4. Expectancies: Generalized tendency to consider alternative means, valence of problem resolution, degree of belief that personal initiative will facilitate resolution (associated with considering alternative means).

5. Cognitive-behavioral resolution strategies.

In considering the qualitative aspect of SPS and noting that the SPSAM reflects differences in children's approaches to various types of social situations, one should also be struck by the marked effect that obstacles seem to have on children's responses. Herein lie two influences on SPS that have generally been underemphasized in previous research and theorizing. First is the way even young children's thoughts and behaviors are attuned to situational demands and rules, reminiscent of Mischel's (1973) concept of "discriminative facility." Second is the role of affect in problem solving. Affective factors, such as unmet expectancies, uncertainty, and personal motivation, play a large role in the ends children hope to attain, the strategies they will consider, and the extent to which they will use their integrated SPS abilities before arriving at a decision (cf. Weick, 1971).

The internal properties of the SPSAM indicate its promise as a research and clinical tool. SPSAM episodes seem to differentiate aspects of problematic social situations that children react to with shifts in their responses. Theoretically hypothesized groupings of variables were generally replicated empirically. SPSAM scores showed considerably stable interrelationships despite fluctuations in the levels of scores for individuals over measurement periods.

The SPSAM also showed sensitivity to differential changes; more complex cognitions such as explicit means-ends linkages, alternative means to goal when faced with obstacles, and a general tendency to consider alternative means showed predictable stability, while indices of social understanding showed developmental progress. Overall, SPSAM measures of SPS content, which presumably reflect relatively stable behavioral strategies and expectations, were more resistive to change over time and due to SPS training than were indices of the quantitative aspects of SPS cognitions.

The primary purpose of this research has been the development of a measure to assess how children understand and think about resolving problematic social situations. Validation of such a measure perhaps most importantly involves evaluating its contribution to the explanation of children's behaviors, relative to indices of other factors theoretically relevant to those behaviors (Lumsden, 1976). The data suggest that SPSAM scores indeed make an important contribution, over and above the degree of explanation provided by IQ, reading scores, parents' occupational and educational status, and generalized expectancies for internal or external control.

Children who exhibit behaviors generally deemed as socially appropriate tend to be those exhibiting relatively high levels of (a) understanding characters, (b) cognitive explicitness and specificity, (c) generating means and outcomes, (d) personal initiative-taking, and/or (e) direct discussion, mutual compromise, and nonaggressiveness when resolving simulated problematic situations involving peers. When the situation involves a teacher, those same children tend to decrease their level of planning and specificity and use more nonconfrontative approaches to resolution. Clearly, the judgment of a child's social adjustment is affected not only by his or her cognitive and behavioral abilities but by the situational discrimination used in

applying those abilities. Most children naturally learn when, where, and to whom certain SPS strategies can be used with greatest effectiveness.

It is important to keep in mind that the SPSAM, like other assessment procedures, does not provide a precise picture of what children actually do when confronted with problematic situations. In that sense, a statistic such as the number of means generated has little absolute meaning. However, to the extent that the SPSAM simulates problematic situations, it is possible that scores on number of means and elaborations are part of a child's overall reflectiveness level; specificity and explicit means-ends linkages can provide particular clues to a child's readiness for action, and allow us to predict his or her success. Expectancies about initiative-taking, outcome, and the tendency to consider alternatives add more information about what the child hopes to attain, how reflective he or she might be, and whether the resolution will involve his or her direct action. Finally, SPSAM teacher rating validation data indicate that knowledge of a child's preferred behavioral resolution strategies is an important aid to understanding how one child is viewed as "well adjusted," and another, "poorly adjusted."

The distinction between competence and performance is often made, and seems applicable when discussion SPS cognitions and behavior. To say that a child can consider explicit means-ends linkages and specificity of action is not to say that the child will do so in all situations, nor that it would be an advantage to do so. SPSAM data do imply that, for young children, planning and specificity are important indicators of behavior in particular situations; indeed, this set of cognitions frequently had additional explanatory power when combined with social understanding and consideration of possibilities.

External validation data also suggested an area for much future study: the ways in which obstacles effect SPS behavior, and the differences between children who

react well to obstacles, and those who seem to be less able to tap into their SPS skills. One preliminary finding is that the former children are seen by peers as independent, while the latter have more friends, perhaps because they are seen as fallible and similar to most of the other children.

While too much cannot be conclusively drawn from the sample of second graders studied here, there is a great deal that can be pointed to as worthy of further research. Developing additional SPSAM stories and refining the scoring system are currently under way. Both Larcen (1978) and Bensky (1978) have already used the SPSAM as an outcome measure, and principlies from the SPSAM have been corporated into the measurement battery of the Primary Mental Health Project-Social Problem Solving Curriculum (Gesten, Note 2). From these efforts, much should be learned about SPSAM sensitivity to specific influences. The first author and several several colleagues have used SPSAM story sequences as clinical tools with troubled youngsters, and it is hoped that some documentation can be obtained to support our judgment of its usefulness as an aid to teaching cognitive and social skills.

Overall, the SPSAM appears to be an innovative way of assessing and learning more about how children understand and attempt to resolve common, problematic interpersonal situations. It is simulational in nature and represents a promising new strategy for measuring interrelated sets of cognitive abilities. Rather than being predictive of which children are "well adjusted," the SPSAM seems to indicate which children "adjust well" to different social situations, and how they go about doing so.

Reference Notes

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2. Gesten, E. L. Personal communication, March 1, 1978.

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Footnotes

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Table 1

Outline of SPSAM Procedure and Episode Structure

Sample Study: B

Episode 1: child establishes problematic social situation

Child sees: Picture 1 (a group of children about to play baseball)

Picture 2 (focal child is not a member of any team and and looks unhappy)

Picture 3 (focal child is watching others play and imagines that he/she could be playing, also)

Child is asked: What's happening in this story?

Role-Taking Subsection: child's understanding of various actors' perspectives

Child sees: Picture 3

Child is asked: Pretend you are this child (point). If you were this child, what would you say is happening?

Episode 2: child's reaction to being confronted with problem

Child sees: Picture 4 (blank)

Child is asked: What can happen next?

Episode 3: how child believes outcome could be reached

Child sees: Picture 5 (focal child is happily playing in the game)

Child is asked: What goes on between here (the problem) and here (the outcome)?

Episode 4: (given only if child does not give focal child initiated action in Episode 3) how child would directly accomplish outcome

Child is asked: What would YOU do so that this happens?

Episode 5: Child's reaction to his/her actions meeting with obstacles

Child is asked: What if what you said you would do can't happen?

Table 1 (cont'd)

Episode 6 (last story in set only): child's understanding and reaction to a similar situation said to occur the next day

Child sees: Picture 6 (next day, focal child is watching two children playing a board game and imagines that he/she could be playing, also)

Child is asked: What's happening now? What would you do next?

Episode 7 (last story in set only): child's reaction to his/her actions meeting with obstacles

Child is asked: What if what you said you would do can't happen?

Table 2

Complete Descriptions of SPSAM Pictures,

All Stories

Story A (some children standing on line with other children in their class)

Picture 1:	a child pushes the focal child
Picture 2:	focal child pushes the child back, and the teacher sees this
Picture 3:	the teacher angrily scolds focal child for pushing
Picture 4:	blank
Picture 5:	the teacher is talking quietly to focal child
Picture 6:	teacher is sitting at her desk with unhappy child next to her, holding a ripped picture and scolding focal child

Story B (some children playing)

Picture 1:	a group of children are about to play baseball
Picture 2:	focal child is not a member of any team and looks unhappy
Picture 3:	focal child is watching others play and imagines that he/she could be playing also
Picture 4:	blank
Picture 5:	focal child is happily playing in the game
Picture 6:	next day, focal child is watching two children playing a board game and imagines that he/she could be playing, also

Story C (some children in a classroom)

Picture 1:	focal child watches another child take a toy
Picture 2:	focal child watches that child happily playing with the toy
Picture 3:	focal child looks sad while watching the other child and imagines himself/herself happily playing with that toy
Picture 4:	blank
Picture 5:	focal child is happily playing with the toy
Picture 6:	next day, focal child looks sad while watching another child play with some blocks and imagines himself/herself happily playing with those blocks

Table 2 (cont'd)

Story D (some children in a classroom)

Picture 1:	a child kicks focal child/(girls: and pulls her hair)
Picture 2:	focal child pushes that child and the teacher sees him
Picture 3:	the teacher angrily scolds focal child for pushing
Picture 4:	blank
Picture 5:	the teacher is talking quietly to focal child
Picture 6:	next day, the teacher is standing with focal child near broken paint bottles, and is scolding focal child

Story E (some children playing)

Picture 1:	a group of children are about to play a board game
Picture 2:	focal child is not included in the game and looks unhappy
Picture 3:	focal child is watching others play and imagines that he/she could be playing, also
Picture 4:	blank
Picture 5:	focal child is happily playing in the game
Picture 6:	next day, focal child is watching some children paint together and imagines that he/she could be painting, also

Story F (some children in a classroom)

Picture 1:	focal child watches another child take a new paint brush
Picture 2:	focal child watches that child happily using the brush
Picture 3:	focal child looks sad while watching the other child and imagines himself/herself happily playing with that brush
Picture 4:	blank
Picture 5:	focal child is happily playing with the paint brush
Picture 6:	next day, focal child looks sad while watching another child play with some blocks and imagines himself/herself happily playing with those blocks

Table 3

Major Variables Measured By the SPSAM

Understanding of Situations

1. Probes: number of distinct questions asked by examiner before child shows an understanding of depicted action

2. Integration of Story Parts: rating of level of explanation and linkage of depicted action in child's unelicited statements; 1 = child cannot tell what is happening; 2 = describes some action, does not see problem; 3 = all pictures understood, action not linked; 4 = spontaneous, non-causal linkage of pictures; 5 = spontaneous causal linkage

Understanding of Characters

1. Role-Taking: degree of reciprocal social perspective taking shown by child; 1 = child unable to take perspectives (egocentric); 3 = completely separate perspectives for each actor; 5 = child mentions something about other actors' viewpoints, feelings, plans from each actor's perspective; 7 = explicit mention of every actor's perspective from each actor's point of view, that point of view depends on what one sees; 9 = child discusses how perspectives are arrived at in terms of possibilities and reasons

2. Breadth of Attributions: recording of first mention of what any character is doing or seeing, feeling, thinking or intending, or of personality qualities of any character, ranging 0-4 per story

Social Problem Solving Cognitions

1. Unconnected Outcomes: number of events, end states child says will simply "occur," but provides no means for

2. Means: number of actions directly or indirectly oriented toward resolution of the situation, such as withdrawing from the situation, seeking help, waiting for others to help, etc.

3. Explicit Means-Ends Linkages (PLANS): number of clearly linked means to their expected outcomes (e.g., "I asked her if I could go to the nurse, and she said, 'Yes'.")

4. Alternative Means to Goal: number of means given in episode 3

Degree of Elaborations

1. Specificity of Actions: number of mentions of what occurs or what could take place; usually action verbs

Table 3 (cont'd)

Degree of Elaboration (cont'd)

2. Conditionality of Actions: number of mentions of when or under what conditions a means, ends, or linkage will occur, or of expected direct responses to actions

3. Context of Actions: number of statements that indicate where or with whom an action or outcome will occur

Expectancy Variables

1. Personal Initiative Taking: whether or not child provides a focal child-initiated action toward resolving situation in episode 3, ranging from 0-3 for a 3 story set

2. Valence of Resolution: whether or not the outcomes anticipated are positive, negative, or unclear for the focal child

3. Generalized Tendency to Consider Alternatives: number of episodes in which child gives more than one mean or PLAN, ranging from 0-12 for a 3 story set

Problem Resolution Strategies

1. Definition: a qualitative rating of the cognitive-behavioral approach to resolution represented by each mean or PLAN; categories include:

mutual compromise--cooperation, mutual exchange
direct discussion--asking, telling, explaining
help-seeking--approach, seek out others
nonconfrontation--meet needs elsewhere, flee situation, wait
resolution by others--complying, crying, others resolve situation
pestering--argue, ask repeatedly
aggression--threat, physical force, disruptive action
uncertainty--unrelated response, "I don't know"

Table 4

Means and Standard Deviations of Major SPSAH Cognitive Variables—Period I

Variable	Story A N	Story A Mean	Story A S.D.[a]	Story B N	Story B Mean	Story B S.D.[a]	Story C N	Story C Mean	Story C S.D.[a]
I. Understanding of Situation and Characters									
PRO (Probes)	83	3.86	2.20	83	3.17	1.79	82	2.70	1.65
ISP (Integration of Story Parts)	83	2.93	1.10	81	3.12	1.05	80	3.38	.93
RT (Role-Taking)	77	2.81	1.30	79	2.85	.99	66	2.88	1.21
BOA (Breadth of Attributions)	78	1.26	.76	78	1.35	.80	65	1.00	.77
II. Indices of Unconnected Outcomes (OUTS)									
OUTS[b]	54	1.01	1.01	64	1.08	1.16	59	.88	.87
BLANK (in Episode 2)	80	.41	.54	82	.49	.57	79	.37	.49
UOUTS (Unique)	83	.78	.78	82	.80	.82	82	.71	.78
III. Indices of Means (ACTS)									
ACTS[b]	54	3.06	1.27	64	3.67	1.52	59	4.22	2.60
AMTG (Alternative Means to Goal)	77	.69	.63	75	.81	.54	75	.95	.71
AMTG-OBS (Response to Obstacle)	62	.52	.50	70	.86	.55	69	.94	.62
UACTS (Unique)	83	2.07	1.25	82	2.89	1.47	82	2.70	1.67
IV. Indices of Explicit Means-Ends Linkages (PLANS)									
PLANS[b]	54	.35	.70	64	.63	1.05	59	.59	1.02
APTG (Alternative Plans to Goal)	77	.12	.43	75	.23	.48	75	.17	.38
APTG-OBS (Response to Obstacle)	62	.02	.13	70	.04	.20	69	.06	.24
UPLANS (Unique)	83	.18	.42	82	.49	.79	82	.30	.54
V. Degree of Elaborations: Overall									
WHATS (Specifity of Actions)	83	15.73	6.47	83	16.45	5.45	82	16.40	5.23
CONTEXT	83	2.13	2.60	83	1.35	1.92	82	1.28	2.16
CONDITIONS	83	1.30	2.51	83	2.01	5.75	82	1.68	2.29
VI. Degree of Elaborations: Obstacles									
WHATS-OBS	67	13.36	12.10	73	14.34	10.33	69	15.55	7.62
CONTEXT-OBS	67	.97	2.92	73	3.13	4.32	69	2.16	3.80
CONDIT-OBS	67	1.39	3.33	73	1.38	3.09	69	1.75	3.60

Table 5

Means and Standard Deviations of Major SPSAH Cognitive Variables--Period II

Variable	Story D N	Story D Mean	Story D S.D.[a]	Story E N	Story E Mean	Story E S.D.[a]	Story F N	Story F Mean	Story F S.D.[a]
I. Understanding of Situation and Characters									
PRO (Probes)	85	2.69	1.74	84	1.89	1.16	85	2.73	1.91
ISP (Integration of Story Parts)	84	3.52	1.14	84	3.69	.92	85	3.34	1.01
RT (Role-Taking)	83	3.33	1.30	81	3.14	.77	76	2.86	1.04
BOA (Breadth of Attributions)	83	1.69	.84	80	1.43	.85	76	1.15	.71
II. Indices of Unconnected Outcomes (OUTS)									
OUTS[b]	67	.85	.93	73	.75	.81	73	.70	.81
BLANK (in Episode 2)	85	.40	.52	83	.46	.50	85	.45	.50
UOUTS (Unique)	85	.84	.80	84	.75	.61	85	.73	.80
III. Indices of Means (ACTS)									
ACTS[b]	67	3.39	1.35	73	4.15	1.22	73	3.97	1.52
AMTG (Alternative Means to Goal)	74	.69	.57	76	.96	.47	79	.89	.55
AMTG-OBS (Response to Obstacle)	76	.76	.56	80	1.00	.53	78	1.01	.50
UACTS (Unique)	85	2.35	1.16	84	3.06	1.26	85	3.09	1.37
IV. Indices of Explicit Means-Ends Linkages									
PLANS[b]	67	.72	.93	73	1.06	1.36	73	.85	1.20
APTG (Alternative Plans to Goal)	74	.22	.41	76	.34	.50	79	.25	.47
APTG-OBS (Response to Obstacle)	76	.08	.27	80	.10	.30	78	.05	.22
UPLANS (Unique)	85	.42	.66	84	.73	1.01	85	.50	.78
V. Degree of Elaborations: Overall									
WHATS (Specificity of Actions)	85	20.64	8.23	83	19.16	5.05	85	16.77	4.73
CONTEXT	85	1.97	2.52	83	1.66	2.03	85	2.00	2.35
CONDITIONS	85	3.25	4.25	83	2.87	2.86	85	2.46	2.79
VI. Degree of Elaborations: Obstacles									
WHATS-OBS	79	19.10	14.66	81	20.36	10.09	79	16.11	8.46
CONTEXT-OBS	79	1.92	4.63	81	4.00	5.35	79	3.29	4.55
CONDIT-OBS	79	3.09	6.03	81	3.30	4.96	79	2.71	4.52

a = Standard Deviation
b = the number of outcomes, means, and means-ends linkages was computed only when Episodes 1 through 5 were scorable

Table 6

Distribution of Personal Initiative-Taking and General Tendency to Consider Alternatives--Period I

Variable	Values	Frequency	Cum. %	N	Mean	S.D.
Initiative[a]	0	3	3.7	82	1.98	.85
	1	21	29.3			
	2	33	69.5			
	3	25	100.0			
GTALTS	0	51	62.2	82	.70	1.17
	1	16	81.7			
	2	10	93.9			
	3	2	96.3			
	4	1	97.5			
	5	1	98.8			
	6	1	100.0			

a = highest possible score = 3, and is interpreted as a lack of personal initiative-taking in problem resolution

Table 7

Distribution of Expectancy Variables--Period II

Variable	Values	Frequency	Cum. %	N	Mean	S.D.
Initiative[a]	0	14	16.7	84	1.55	1.01
	1	28	50.0			
	2	24	78.6			
	3	18	100.0			
GTALTS	0	51	60.7	84	1.39	.49
	1	13	76.2			
	2	13	91.7			
	3	4	96.4			
	4	2	98.8			
	5	1	100.0			

a = highest score possible = 3, and is interpreted as a lack of personal initiative-taking in problem resolution

Table 8

Distribution of Valence of Resolution--Period I

Story	Valence	Episode % 2[a]	3[b]	5[c]
A	Positive	27.0	47.6	20.0
	Neutral	21.6	28.6	0.0
	Negative	51.4	23.8	80.0
	N =	37	21	15
B	Positive	91.1	67.9	44.4
	Neutral	8.9	21.4	0.0
	Negative	0.0	10.7	55.6
	N =	45	28	9
C	Positive	90.9	95.8	26.7
	Neutral	3.0	4.2	6.7
	Negative	6.1	0.0	66.6
	N =	33	24	15

a= child's reaction to being confronted with problem
b= how child believes outcome could be reached
c= child's reaction to his/her actions meeting with obstacles

Table 9

Distribution of Valence of Resolution--Period II

Story	Valence	Episode % 2[a]	3[b]	5[c]
D	Positive	37.2	72.0	18.8
	Neutral	27.9	24.1	18.8
	Negative	31.9	3.4	56.3
	N =	43	29	16
E	Positive	96.0	90.3	52.9
	Neutral	4.0	3.2	23.5
	Negative	0.0	6.5	23.5
	N =	50	31	17
F	Positive	92.3	89.3	44.4
	Neutral	5.8	10.7	0.0
	Negative	1.9	0.0	55.6
	N =	52	28	9

a = child's reaction to being confronted with problem
b = how child believes outcome could be reached
c = child's reaction to his/her actions meeting with obstacles

Table 10

Relative Frequency of Use of Problem Resolution Strategy Categories

Story	High[a]	Low[b]
A	direct discussion resolution by others	help-seeking nonconfrontation
B	direct discussion resolution by others	pestering
C	direct discussion resolution by others nonconfrontation	pestering
D	direct discussion resolution by others	help-seeking pestering
E	direct discussion resolution by others nonconfrontation	pestering
F	direct discussion nonconfrontation help-seeking	pestering

a = generally used by over 50% of all children

b = generally used by under 50% of all children

Table 11

Distribution of Salient Resolution Strategies for Groups of Children that Will or Will Not Receive Training--Period I

Story	Episode	To Be Trained: Problem Resolution Strategy	%	To Remain Untrained: Problem Resolution Strategy	%
A	2	Resolution by others	42.1	Resolution by others	53.4
		Uncertainty	18.4	Uncertainty	20.0
		Direct discussion	15.8	Aggression	13.3
	N =		38		15
	3	Resolution by others	33.4	Direct discussion	43.8
		Uncertainty	31.3	Resolution by others	18.8
		Direct discussion	25.0	Uncertainty	18.8
	N =		48		16
	4	Direct discussion	51.1	Direct discussion	35.7
		Uncertainty	17.8	Uncertainty	35.7
		Resolution by others	13.3	Resolution by others	14.3
	N =		45		14
	5	Direct discussion	31.1	Resolution by others	33.4
		Uncertainty	31.1	Direct discussion	26.7
		Resolution by others	26.7	Uncertainty	26.7
	N =		45		15
B	2	Resolution by others	54.6	Resolution by others	37.5
		Nonconfrontation	18.1	Uncertainty	31.3
		Uncertainty	12.1	Direct discussion	12.5
		Direct discussion	12.1		
	N =		33		16
	3	Resolution by others	39.6	Resolution by others	56.3
		Direct discussion	29.2	Direct discussion	31.3
		Uncertainty	14.6	Uncertainty	6.3
	N =		4.8		1.6
	4	Direct discussion	44.4	Direct discussion	57.1
		Uncertainty	13.3	Uncertainty	14.3
		Nonconfrontation	8.9	Mutual compromise	14.3
		Aggression	8.9		
	N =		45		14
	5	Nonconfrontation	43.5	Nonconfrontation	38.9
		Resolution by others	13.2	Resolution by others	22.2
		Uncertainty	13.2	Uncertainty	16.7
	N =		53		18
C	2	Resolution by others	39.0	Direct discussion	30.8
		Nonconfrontation	21.9	Nonconfrontation	23.1
		Mutual Compromise	12.2	Resolution by others	15.4
				Uncertainty	15.4
	N =		41		13
	3	Resolution by others	24.0	Resolution by others	42.1
		Direct discussion	22.0	Direct discussion	15.8
		Uncertainty	18.0	Uncertainty	15.8
	N =		50		19
	4	Direct discussion	48.6	Direct discussion	50.0
		Uncertainty	20.0	Uncertainty	16.7
				Mutual compromise	16.7
				Nonconfrontation	16.7
	N =		35		12
	5	Nonconfrontation	47.1	Nonconfrontation	41.2
		Resolution by others	17.7	Resolution by others	23.5
		Help-seeking	11.8	Help-seeking	17.6
	N =		51		17

Table 12

Distribution of Salient Resolution Strategies For Trained and Untrained Children--Period II

Story/Episode		Trained Problem Resolution Strategy	%	Untrained Problem Resolution Strategy	%
D	2	Direct discussion	40.5	Direct discussion	30.0
		Resolution by others	35.7	Resolution by others	20.0
		Mutual compromise	11.9	Mutual compromise	20.0
	N =		44		10
	3	Direct discussion	64.3	Direct discussion	47.1
		Uncertainty	16.7	Uncertainty	29.4
		Resolution by others	16.7	Resolution by others	23.6
	N =		42		17
	4	Direct discussion	52.9	Direct discussion	45.5
		Resolution by others	23.5	many with	2.9
	N =		34		11
	5	Resolution by others	32.2	Resolution by others	44.4
		Direct discussion	32.2	Direct discussion	33.3
		Uncertainty	16.9	Uncertainty	16.7
	N =		59		18
E	2	Direct discussion	44.1	Resolution by others	61.6
		Resolution by others	22.2	Direct discussion	23.1
		Nonconfrontation	19.5		
	N =		36		13
	3	Direct discussion	61.1	Direct discussion	36.8
		Uncertainty	9.3	Resolution by others	31.6
		Nonconfrontation	9.3	Nonconfrontation	15.8
	N =		64		19
	4	Direct discussion	52.0	Direct discussion	54.6
	N =		25		11
	5	Nonconfrontation	43.4	Nonconfrontation	45.0
		Help-seeking	16.7	Help-seeking	15.0
		Direct discussion	15.0	Uncertainty	10.0
	N =		60		20
F	2	Nonconfrontation	25.0	Resolution by others	54.5
		Direct discussion	22.5	Mutual compromise	18.2
		Mutual compromise	12.5		
	N =		40		11
	3	Nonconfrontation	29.1	Resolution by others	29.4
		Direct discussion	23.6	Direct discussion	23.5
		Resolution by others	21.8	Nonconfrontation	23.5
	N =		55		17
	4	Direct discussion	30.3	Direct discussion	40.0
		Nonconfrontation	24.3	Nonconfrontation	20.0
		Help-seeking	15.2	Help-seeking	13.3
				Mutual compromise	13.3
	N =		33		11
	5	Nonconfrontation	44.3	Help-seeking	41.2
		Help-seeking	27.9	Nonconfrontation	29.4
	N =		61		17

Intercorrelation of SPSAM Variables: Stories B and E

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Probes	-											
2. Integration of Story Parts	-.47 (-.60)	- -										
3. Role-Taking	-.28 (+.03)	.35 (.15)	- -									
4. Breadth of Attributions	-.28 (+.00)	.14 (.18)	.43 (.38)	- -								
5. Alternative Means to Goal	-.12 (-.05)	.09 (.07)	.20 (.29)	.13 (.09)	- -							
6. Alternative Means After Obstacles	.08 (-.08)	.07 (-.03)	.10 (.18)	.20 (.19)	.13 (-.08)	- -						
7. Unconnected Outcomes	-.02 (.12)	.06 (.04)	.20 (-.01)	.23 (.06)	-.22 (.09)	-.06 (-.29)	- -					
8. Explicit Means-Ends Linkages	-.09 (-.10)	.15 (.24)	.25 (.23)	.41 (.26)	.45 (.35)	.43 (.07)	.07 (-.08)	- -				
9. Specificity of Actions	-.37 (+.01)	.35 (.27)	.15 (.20)	.26 (.21)	.28 (.18)	.27 (.26)	-.13 (-.21)	.31 (.55)	- -			
10. Conditionality	-.19 (-.17)	.07 (.30)	.15 (.28)	.40 (.19)	.08 (.32)	.37 (.28)	.14 (.02)	.36 (.43)	.42 (.56)	- -		
11. Context	-.10 (+.09)	.01 (.05)	.14 (.17)	.07 (.06)	.04 (.11)	.35 (.14)	-.15 (-.17)	.06 (.19)	.19 (.21)	.26 (.18)	- -	
12. Initiative[a]	.04 (.20)	-.16 (-.11)	-.17 (-.10)	-.15 (.05)	-.30 (-.26)	.01 (.18)	.04 (.12)	-.35 (-.23)	-.14 (-.03)	.05 (.07)	.03 (.06)	- -

N=60 $p < .05 = .25$ $p < .01 = .32$
(N=69 $p < .05 = .24$ $p < .01 = .31$

Note: Values in parentheses refer to Story E; significant correlations are underlined

a= a high score denotes low initiative-taking

Table 14

Principal Factor Analysis (Varimax Rotation)—Story E

Story E N=69

Factor I		Factor II		Factor III	
Specificity of Actions	.80	Probes	.96	Unconnected Outcomes	.82
Conditionality	.66	Integration of Story Parts	-.64	Alternative Means After Obstacles	-.40
PLANS	.65				
Context	.24				
% variance	27.8		14.6		11.0
cum. %	27.8		42.4		53.4

Factor IV		Factor V	
Role-Taking	.81	INITIATIVE	.69
Breadth of Attributions	.43	Alternative Means to Goal	-.39
% variance	8.5		6.9
cum. %	61.9		68.9

Eigenvalues of Factors:	I	II	III	IV	V
	2.95	1.63	1.42	1.24	1.02

Table 16

Stability of SPSAM Scores: Number of Children Shifting Over Measurement Periods

Variable	Stories	N	% Increase	% No Change	% Decrease	χ^2[a]	df	C[b]
PRO (Probes)	A-D	77	26.0	19.4	54.6	16.06	2	.42
	B-E	77	15.6	24.7	59.7	25.08	2	.50
	C-F	78	37.2	23.1	39.7	3.77	2	.21
ISP (Integration of Story Parts)	A-D	77	51.9	28.6	19.5	12.94	2	.38
	B-E	76	53.9	29.0	17.1	16.15	2	.42
	C-F	76	23.7	36.8	39.5	3.27	2	.20
RT (Role-Taking)	A-D	70	50.0	32.9	17.1	11.36	2	.37
	B-E	70	40.0	38.6	21.4	4.49	2	.25
	C-F	54	35.2	29.7	35.1	1.30	2	.15
BOA (Breadth of Attributions)	A-D	71	54.9	31.0	14.1	17.92	2	.45
	B-E	69	36.2	33.3	30.5	1.00	2	-
	C-F	52	38.3	40.4	21.3	3.10	2	.24
AMTG (Alternative Means to Goal)	A-D	64	28.1	50.0	21.9	8.39	2	.34
	B-E	64	25.0	59.4	15.6	20.41	2	.49
	C-F	67	22.4	59.7	17.9	21.20	2	.49
AMTG-OBS (Alternative Means After Obstacles)	A-D	51	35.3	58.8	9.9	25.53	2	.53
	B-E	61	24.6	62.3	13.1	24.27	2	.53
	C-F	61	19.7	67.2	13.1	31.95	2	.59
OUTS (Unconnected Outcomes)	A-D	39	23.1	43.6	33.3	2.46	2	.24
	B-E	53	22.6	43.4	34.0	3.43	2	.25
	C-F	50	18.0	50.0	32.0	7.70	2	.37
APTG (Alternative Plans to Goal)	A-D	64	20.3	75.0	4.7	52.40	2	.67
	B-E	64	21.9	68.8	9.3	37.80	2	.61
	C-F	67	17.9	70.1	12.0	41.29	2	.62
APTG-OBS (Alternative Plans After Obstacles)	A-D	51	11.8	88.2	0.0	70.24	2	.76
	B-E	61	8.2	86.9	4.9	78.95	2	.75
	C-F	61	6.6	86.8	6.6	78.85	2	.75
GTALTS (Tendency to Consider Alternatives)		75	29.3	45.3	25.3	5.04	2	.25
INITIATIVE[c]		76	19.7	28.9	51.3	12.04	2	.37

a= critical values for $\chi^2(2)=6.00$, $p < .05$; 9.20, $p < .01$; 13.80, $p < .001$; significant χ^2 are underlined

b= coefficient of contingency

c= higher scores imply a lack of personal initiative-taking

Table 17

Quantitative Shifts in SPSAM Scores Over Measurement Periods for Trained and Untrained Children

Variables	Stories	Trained				Untrained			
		Difference	t[a]	df(N-1)	p<	Difference	t[a]	df(N-1)	p<
PRO (Probes)	A-D	-1.23	-3.40	59	.001	-1.61	-2.71	17	.02
	B-E	-1.10	-4.54	58	.001	-1.89	-3.80	17	.001
	C-F	+ .12	+ .44	59	n.s.	- .65	-1.34	16	n.s.
ISP (Integration of Story Parts)	A-D	+ .62	+3.74	59	.001	+ .82	+2.04	16	.06
	B-E	+ .64	+4.47	57	.001	+ .67	+1.94	17	.07
	C-F	- .07	- .41	58	n.s.	+ .13	+ .44	15	n.s.
RT (Role-Taking)	A-D	+ .52	+2.65	53	.01	+ .69	+2.20	15	.04
	B-E	+ .34	+2.05	52	.05	+ .41	+1.51	16	n.s.
	C-F	- .30	-1.19	39	n.s.	+ .43	+1.10	13	n.s.
BOA (Breadth of Attributions)	A-D	+ .51	+4.40	54	.001	+ .75	+2.54	15	.02
	B-E	+ .21	+1.40	51	n.s.	- .12	- .38	16	n.s.
	C-F	+ .28	+1.54	38	n.s.	- .08	- .27	12	n.s.
OUTS	A-D	- .10	- .38	28	n.s.	- .60	-1.62	9	n.s.
	B-E	- .29	-1.48	40	n.s.	- .17	- .41	11	n.s.
	C-F	- .23	-1.24	39	n.s.	- .30	-1.15	9	n.s.
ACTS	A-D	+ .00	+ .00	28	n.s.	+ .60	+1.77	9	n.s.
	B-E	+ .17	+ .59	40	n.s.	+1.67	+3.58	11	.004
	C-F	+ .05	+ .13	39	n.s.	+ .30	+ .45	9	n.s.
PLANS	A-D	+ .48	+2.25	28	.03	+ .50	+1.86	9	n.s.
	B-E	+ .59	+2.53	40	.02	+ .33	+1.00	11	n.s.
	C-F	+ .53	+2.52	39	.02	- .90	-1.65	9	n.s.
AMTG (Alternative Means to Goals)	A-D	+ .04	+ .29	47	n.s.	+ .13	+ .81	15	n.s.
	B-E	+ .08	+ .70	48	n.s.	+ .20	+1.00	14	n.s.
	C-F	+ .04	+ .34	51	n.s.	- .07	- .37	14	n.s.
AMTG-OBS	A-D	+ .26	+2.24	38	.03	+ .25	+1.39	11	n.s.
	B-E	+ .02	+ .22	46	n.s.	+ .57	+4.16	13	.001
	C-F	+ .10	+ .90	48	n.s.	+ .17	+ .80	11	n.s.
APTG (Alternative Plans to Goals)	A-D	+ .13	+1.35	47	n.s.	+ .13	+1.00	15	n.s.
	B-E	+ .16	+1.83	48	n.s.	+ .07	+ .56	14	n.s.
	C-F	+ .10	+1.30	51	n.s.	- .07	- .43	14	n.s.
APTG-OBS	A-D	+ .13	+99.0	38	.001	+ .08	+99.0	11	.001
	B-E	+ .06	+1.14	46	n.s.	- .07	-99.0	13	.001
	C-F	+ .06	+99.0	48	.001	- .25	-1.39	11	n.s.
INITIATIVE[b]		- .49	-3.75	58	.001	- .35	-1.38	16	n.s.
GTALTS		+ .08	+ .47	58	n.s.	- .06	- .21	16	n.s.
WHATS (Specificity)	A-D	+5.38	+4.11	59	.001	+3.39	+1.66	17	n.s.
	B-E	+2.41	+3.29	57	.002	+3.44	+2.00	17	.06
	C-F	+ .02	+ .02	59	n.s.	- .35	- .18	16	n.s.
CONTEXT	A-D	- .12	- .29	59	n.s.	-1.11	-1.35	17	n.s.
	B-E	+ .10	+ .27	57	n.s.	+1.06	+2.11	17	.05
	C-F	+ .58	+1.52	59	n.s.	+ .41	+ .67	16	n.s.
CONDIT (Conditionality)	A-D	+2.85	+4.34	59	.001	+ .22	+ .21	17	n.s.
	B-E	+1.64	+3.85	57	.001	-1.28	- .43	17	n.s.
	C-F	+ .95	+2.09	59	.04	+1.06	+1.56	16	n.s.
WHATS-OBS	A-D	+4.98	+2.08	44	.04	+2.08	+ .62	11	n.s.
	B-E	+6.75	+3.75	50	.001	+8.20	+3.23	14	.006
	C-F	+1.20	+ .66	48	n.2.	-2.00	- .74	11	n.s.
CONDIT-OBS	A-D	+2.91	+2.48	44	.02	-1.67	-1.00	11	n.s.
	B-E	+2.14	+2.47	50	.02	+2.14	+1.31	13	n.s.
	C-F	+1.82	+2.17	48	.04	-1.08	- .67	11	n.s.
CONTEXT-OBS	A-D	+1.71	+2.06	44	.05	-1.25	-1.39	11	n.s.
	B-E	+ .20	+ .21	50	n.s.	+2.00	+1.03	13	n.s.
	C-F	+1.57	+2.06	48	.05	-1.75	-1.12	11	n.s.

a= correlated t-tests used in all analyses
b= a high score implies less personal initiative-taking

Table 18

Relationship of Individual SPSAM Variables
Across Stories to Selected PAI Behaviors

SPSAM Predictor	R^2	F	df	p<	Story	F	df	p<	Beta	r	$U^a R^2$
PAI Behavior: Go to with questions or problems											
RT[b]	.18	2.30	3,32	.10	D	.45	1,32	n.s.	-.13	.12	.01
					E	.09	1,32	n.s.	.05	.14	.00
					F	5.93	1,32	.05	.46	.41	.15
AMTG[c]	.59	10.38	3,22	.005	D	7.94	1,22	.02	-.41	-.16	.15
					E	20.78	1,22	.005	.73	.66	.39
					F	.53	1,22	n.s.	.11	.38	.01
OUTS	.43	4.36	3,17	.05	D	.42	1,17	n.s.	.12	.17	.01
					E	11.63	1,17	.005	.63	.65	.39
					F	.06	1,17	n.s.	-.04	-.11	.00
PAI Behavior: Does things on own--independent											
AMTG	.28	2.92	3,22	.06	D	1.88	1,22	n.s.	-.26	-.09	.06
					E	4.33	1,22	.05	.44	.44	.14
					F	.88	1,22	n.s.	.19	.35	.03
PAI Behavior: Shares with others											
AMTG	.33	3.58	3,22	.05	D	.15	1,22	n.s.	-.07	.12	.01
					E	7.59	1,22	.02	.56	.57	.23
					F	.07	1,22	n.s.	.05	.30	.00
UPLANS[d]	.26	3.70	3,32	.05	D	.17	1,32	n.s.	-.07	.06	.00
					E	6.30	1,32	.05	.44	.23	.15
					F	8.75	1,32	.01	-.49	-.33	.20
WHATS[e]	.20	2.65	3,32	.07	D	5.25	1,32	.05	-.45	-.17	.13
					E	6.41	1,32	.05	.52	.19	.16
					F	1.93	1,32	n.s.	-.23	.12	.05

a= U_R^2 refers to the unique contribution of a given variable to the overall R^2
b= role-taking
c= alternative means to goal
d= unique means-ends linkages
e= specificity of action strategies

Table 19

Problem Resolution Strategies of Children and Group Membership
Based on Teacher's Ratings of Interpersonal Adjustment and Group Involvement

Rating:	Interpersonal Adjustment		Rating:	Group Involvement
Story:	A	D	Story:	D
Classification:[a]	67.4% correct	72.4% correct	Classification:	81.0% correct
Significance:	$\chi^2(1) = 3.70$, $p < .10$, $\phi = .12$	$\chi^2(1) = 4.90$, $p < .05$, $\phi = .17$	Significance:	Fisher's exact test, $p < .05$
PRS and High Rating:	Nonconfrontation	Nonconfrontation	PRS and High Rating:	Nonconfrontation
PRS and Low Rating:	Aggression	Aggression	PRS and Low Rating:	Mutual Compromise, Direct Discussion
Story:	B	E	Story:	E
Classification:[a]	71.0% correct	86.2% correct	Classification:	100.0% correct
Significance:	$\chi^2(1) = 6.05$, $p < .05$, $\phi = .20$	$\chi^2(1) = 15.54$, $p < .001$, $\phi = .54$	Significance:	Fisher's exact test, $p < .001$
PRS and High Rating:	Mutual Compromise, Nonconfrontation	Direct Discussion, Help-Seeking	PRS and High Rating:	Mutual Compromise
PRS and Low Rating:	Pestering, Aggression	Resolution By Others	PRS and Low Rating:	Uncertainty
Story:	C	F	Story:	F
Classification:[a]	77.4% correct	69.0% correct	Classification:	90.5 correct
Significance:	$\chi^2(1) = 9.81$, $p < .001$, $\phi = .32$	$\chi^2(1) = 4.46$, $p < .05$, $\phi = .15$	Significance:	Fisher's exact test, $p < .01$
PRS and High Rating:	Mutual Compromise, Direct Discussion	Direct Discussion	PRS and High Rating:	Mutual Compromise, Direct Discussion
PRS and Low Rating:	Help-Seeking	Uncertainty	PRS and Low Rating:	Aggression, Pestering

a= all classifications based on standardized predictor weights generated by discriminant analyses of PRS group membership.
b= Problem Resolution Strategy

Table 10

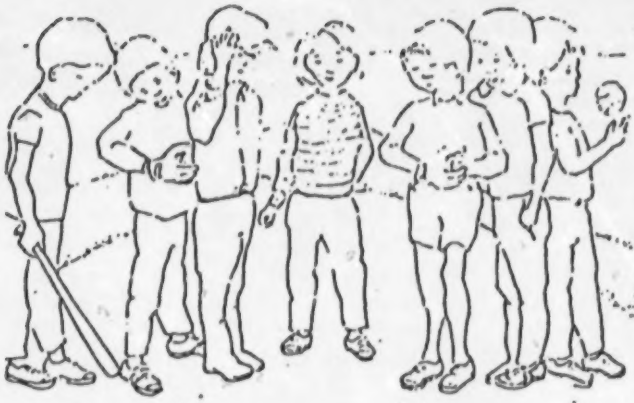
Key SPSAM Variables Predicting Peer Nominations as a Child Working at the Desk

Story	Set	Variable	F	df	p<	beta	r
A	a	RT[a]	6.86	1,10	.05	1.02	-.15
		BOA[b]	7.67	1,10	.03	.57	.10
		ISP[c]	6.00	1,10	.05	-.94	-.31
	a	PLANS	17.15	1,7	.005	-.64	-.11
C	a	CONTEXT	4.40	1,8	.10	.38	.32
		CONDIT[d]	15.22	1,8	.005	.84	.59

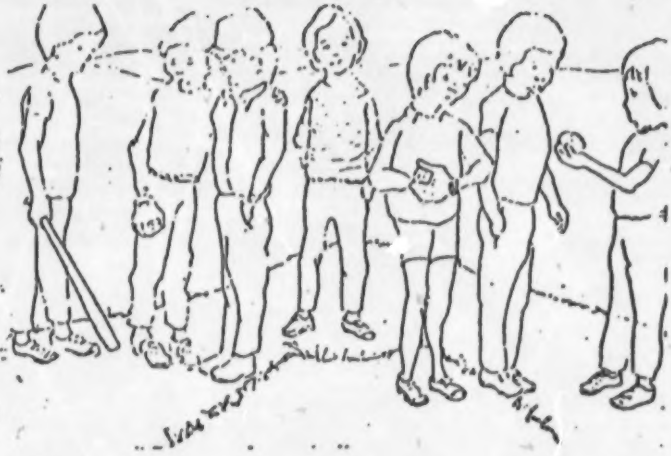
a= role-taking
b= breadth of attributions
c= integration of story parts
d= conditions under which actions occur

Story B

1)



2)



3)

4)

5)

6)

Story C

Story E

1)

2)

3)

4)

5)

6)